

What is claimed is:

1. An etching method for a ZnSe polycrystalline substrate, wherein reactive ion etching is applied by means of only chlorine-based gas which does not include a hydrocarbon group.

5 2. An etching method for a ZnSe polycrystalline substrate, wherein reactive ion etching is applied by mixing:
chlorine-based gas which does not include a hydrocarbon group; and
inert gas or gas which does not react to ZnSe.

3. An etching method for a ZnSe polycrystalline substrate as set forth in
10 Claim 2, wherein
said inert gas includes Ar.

4. An etching method for a ZnSe polycrystalline substrate as set forth in
Claims 1 through 3, wherein
said chlorine-based gas includes BCl_3 gas.

15 5. An etching method for a ZnSe polycrystalline substrate as set forth in
Claims 1 through 3, wherein
said reactive ion etching is performed at a gas pressure of 0.5Pa through
1Pa.

6. An etching method for a ZnSe polycrystalline substrate as set forth in
20 Claims 1 through 3, wherein
the gas is activated by means of a radio frequency.